Soutenance de HDR : Frédéric Precioso

03 Décembre 2010, 10:30 – 12:30

Salle de soutenance

Université de Cergy-Pontoise, amphithéâtre Emile-Noël, les Chênes.

English title

Learning for classification and content-based retrieval in multimedia databases.

Summary

The very challenging context of video content retrieval in large databases requires classification methods able to deal with highly semantic concepts and multi-class objectives while being compliant with user interaction (as on-line learning). When considering current state-of-the-art or even reference methods for video content retrieval, two key issues appear: the scalability becomes critical when dealing with video data; the temporal information is underused in data representation avoiding to handle the semantic complexity of video concepts.

In the first part, we focus on building new similarity measures scalable with respect to the size of the database, considering the context of retrieval when images are represented by a single feature histogram then proposing a scalable active learning strategy and finally designing a kernel-based similarity approach handling powerful data representation while preserving efficiency.

In the second part, we first integrate learning processes in active contour segmentation. On one hand we integrate a statistical model learning shape prior and, on the other hand, we design a new semi-supervised interactive segmentation scheme which iteratively learns the object to segment.

Finally, we present a new algorithm based on boosting for interactive object retrieval in images. In this last part, we address more specifically the problem of video classification and retrieval, providing a new representation of video objects which fully holds spatiotemporal information then designing a system able to either learn semantic classes of objects or provide accurate object recognition.

Composition du jury

- Jenny Benois-Pineau, professeur des Universités, Université de Bordeaux 1, rapporteur
- Stéphane Canu, professeur des Universités, INSA de Rouen, rapporteur
- Cédric Richard, professeur des Universités, Université de Nice-Sophia Antipolis, rapporteur
- Isabelle Bloch, professeur, Telecom Paristech
- Laure Blanc-Féraud, directrice de recherche CNRS, Université de Nice-Sophia Antipolis
- Matthieu Cord, professeur des Universités, UPMC - Sorbonne Universités

- Sylvie Philipp-Foliguet, professeur des Universités, ENSEA Cergy